

## CLAIMS

1. A vane system for a centrifugal compressor (10), characterized in that it comprises two rows (15, 20) of vanes (15', 20') installed in series inside a suction duct (14), the first row (15) of fixed vanes (15') being suitable for homogenizing the gas flow passing through them and sending it to a second row (20) of adjustable vanes (20'), said second row being equipped with a guiding mechanism comprising a mechanical system (30) suitable for varying the orientation of the vanes (20').
2. The vane system according to claim 1, wherein said first row (15) of fixed vanes (15') is fixed by means of roots (16) to the structure (17) of the diffuser, in turn connected to the terminal portion (18') of the compressor box (18).
3. The vane system according to claim 1, wherein the second row (20) of adjustable vanes (20') equipped with the mechanical system (30), is activated by an actuator (70), preferably of the pneumatic type, suitable for varying the orientation of the vanes so as to vary the incidence angle on the rotor, thus modifying the flow gradient and discharge pressure.
4. The vane system according to claim 1, wherein the guiding mechanical system (30) comprises the connection of each adjustable vane (20') of the second row (20) to a

shaft (33) by means of a first leverage (51) suitable for receiving the rotation imparted by the actuator (70).

5     5. The vane system according to claim 4, wherein each adjustable vane (20') is connected, through its foot (50) produced in the form of a shaft, to the first leverage (51), in turn connected by means of the rotating ring pin (52), to a disk (53) which receives the rotational movement induced by the shaft (33).

10    6. The vane system according to claim 5, wherein said double leverage (51) comprises a lever (54) fixed at one end to said foot of the adjustable vane (20') and hinged at the other end to a tie rod (55) by means of a rotating ring pin (56).

15    7. The vane system according to claim 6, wherein said tie rod (55) is, in turn, hinged to the disk (53) to receive the rotational movement of the shaft (33).

8. The vane system according to claim 7, wherein said shaft (33) is connected to said disk (53) by means of a second leverage (84).

20    9. The vane system according to claim 4, wherein said shaft (33) is equipped with a thrust rim (34) which rests on bushings (38) coated with antifriction treatment.

10. The vane system according to claim 4, wherein said shaft is divided into two portions, a first portion (33') towards the vanes, and a second portion (33'') outwards,

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connected by means of the joint (57).

11. The vane system according to claim 10, wherein a ring (41) is positioned at the end of the first portion (33') of said shaft (33), close to the joint (57),  
5 equipped with Teflon washers (37), energized with a spring to retain the process gas inside the box (18), and a further ring (41), equipped with o-ring washers (36), is situated downstream, to retain the lubricant vapors (40) present.

10 12. The vane system according to claim 4, wherein the shaft (33) is also equipped with at least one sealing ring (44) which serves to keep the dirty particles and sludge out of the box (18).

13. The vane system according to claim 4, wherein there  
15 is also a spiral coil (39) which envelops the shaft body (33) to keep it in a stand-by position, and which rests on a retention body (35) which rubs against the shaft itself, with the interposition of antifriction bushings (38).

20 14. The vane system according to claim 4, wherein the end of the second portion (33'') of the shaft (33) which protrudes outside the box (18) is connected to an actuation and control system (60) comprising the actuator (70) which transmits rotation upon command, a third leverage  
25 (61) substantially similar to the first two leverages

(51, 81) and a reading system of the inclination angle of the vanes (20').

15. The vane system according to claim 14, wherein the reading of the orientation imparted to the vanes (20') of  
5 the second row (20) is effected by means of a reference index (63) fixed to the third leverage (61) and which co-operates with a graduated label (42) fixed, for example, to the ring (41).